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## **PROLEGOMENA TO THE ECONOMICS OF RURAL ORGANIZATION**

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## Prolegomena to the Economics of Rural Organization

### *Abstract*

In order to design effective policies to remedy a market failure, one has to understand its underlying source. One needs also to recognize that markets are interlinked not only through price interactions, as modeled in general equilibrium theory, but also through their information costs. What happens in one sector or market can have repercussions on the nature of transaction costs, risks, and enforcement mechanisms used in other markets.

To design effective development policies, one therefore needs a theory of rural organization. This paper attempts to set out the main themes of that theory. We trace the origins of the Economics of Rural Organization back to the emergence of a new neoclassical paradigm based on transaction costs and imperfect information. We also review its relation to other major areas of development economics: planning, the Institutionalist tradition, and the work of Theodore Schultz and others of the Chicago school. We view the Economics of Rural Organization as a unification of the Institutionalist tradition with the rationalist approach of the Chicago school.

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## Prolegomena to the Economics of Rural Organization

This book represents a coming of age of the Economics of Rural Organization--- a branch of economics devoted to understanding market and nonmarket institutions within the rural sector, primarily of less developed countries. It is concerned with how these institutions affect the allocation and distribution of resources, how they have evolved, and how they will adapt to changing circumstances. The field, which has grown slowly but steadily over the past twenty years, had blossomed to the point where, as we began planning this book in 1987, we could draw upon the work of dozens of scholars in countries throughout the developed and developing world.

Institutional economists of an older generation argued, quite rightly, that economic analysis needed to take account of institutions. But they often failed to explain the origins of those institutions and therefore were not in a position to predict how the institutions might change in response to new economic conditions--as change they did over the course of time.

The Economics of Rural Organization takes as its objective explaining the economic institutions of the rural sector. By an economic institution we mean a public system of rules that define the kinds of exchanges that can occur among individuals and that structure their incentives in exchange. Economic institutions include markets and property rights, systems of land and animal tenure, obligations of mutual insurance within lineage groups, and other systems of exchange that are determined by implicit contracts or social norms.

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\*This paper is chapter 1 of The Economics of Rural Organization, Karla Hoff, Avishay Braverman, and Joseph E. Stiglitz (eds), Oxford University Press, forthcoming.

This branch of economics shares with other branches of economics the belief that at least many aspects of institutions reflect "rational" responses to economic problems. By rationality we mean that individuals act in a way that advances their objectives, given the information and opportunities that they have.<sup>1</sup> The chapters in this book largely investigate rational, noncooperative behavior. There is, however, a large gap between "individual rationality" and "collective rationality," as Arrow (1951) emphasized. Recent work, discussed below, has argued that with incomplete markets, imperfect information, or mutually sustaining networks of social sanctions, markets are not, in general, Pareto efficient and in this sense do not exhibit "collective rationality."

#### **The Origins of the Economics of Rural Organization**

Over the past thirty years the neoclassical model formalized by Arrow and Debreu (1954) has become the "standard" model, the benchmark against which other models may easily be compared, both with respect to their assumptions and conclusions. In that model all individuals have the same information, and there are no transaction costs. While individuals may not be perfectly informed, the model does not admit to the possibility that individuals can use resources to acquire more information, or that individuals' beliefs can be affected either by the actions of others or the consequences of those actions---such as the prices that emerge in a market or the quantities of

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<sup>1</sup> There are at least two other ways that the concept of rationality been used in economics. For some, it means little more than that individuals act in a consistent way. For others, it means that they act in a way which, to an outside observer, indicates a "rational" pursuit of their objectives. Thus, if the subjective probabilities of individuals differ markedly from objective frequencies, then they may act in a consistent way (satisfying rationality in the first sense) but not in a way which reasonably conforms to the pursuit of their actual objectives. The recent literature in experimental psychology provides evidence that individuals often do not act rationally in the second sense.

goods that are traded.<sup>2</sup> An implication of these assumptions is that markets for all goods will exist<sup>3</sup>, including markets for future goods and for all risks. Economic relations can be reduced to price relations. One party delivers goods or services to the other in exchange for money; that is the end of the relationship. There is thus no place in this model for institutions other than markets and property rights.

The standard neoclassical model is a powerful tool to analyze the allocation of resources where markets work reasonably well, but it is not equipped to handle missing markets, quantity constraints which arise when prices do not adjust to market clearing levels, and nonmarket exchanges. Formal models to explain the absence in actual economies of many markets, especially for risk, and the fact that many transactions are based on more than price, have been developed only since the late 1960s (and are still the subject of vigorous research). This work has involved extensions of the neoclassical model to allow for differences among individuals in the information they have, and for transaction costs. The insights on which these extensions are based have been understood intuitively at least since

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<sup>2</sup> While the Arrow-Debreu model can accommodate some kinds of information imperfections---individuals don't need to know whether it will rain tomorrow or not---other kinds of information imperfections have to be ruled out: when tomorrow comes around, for instance, we have to be able to ascertain whether or not it has rained. The "commodities" which are traded are taken as primitives in the analysis.

There have been attempts to extend the Arrow-Debreu framework to incorporate endogenous beliefs (for example, Radner (1968), transactions costs (for example, Foley (1970) and Hahn (1973)), or incomplete markets (for example, Borch (1968) or Diamond (1967)). It is now recognized that those early attempts were not particularly successful. They employed highly restrictive assumptions. When those assumptions were dropped, all of the basic propositions of the Arrow-Debreu model were shown not to be robust. For instance, as we note below, only under very restrictive conditions is the economy Pareto efficient---even taking into account the costs of information or the transaction costs associated with establishing markets. See Greenwald and Stiglitz 1986, 1988 and, for a survey of results, Stiglitz (1985).

<sup>3</sup> This result requires, in addition, the assumption of convexity---there are no fixed costs of production. This is an assumption that underlies all of the Arrow-Debreu model.

the time of Adam Smith<sup>4</sup>. But by incorporating them into formal models, this work changed the conceptual framework of neoclassical economics.

The old conceptual framework of neoclassical economics recognized that the exchange of goods, credit, and labor often does not occur through the impersonal mechanism of the price system. But its claim was that the basic economic forces that it had identified---such as the law of supply and demand and property rights---were all that mattered. The only aspect of institutional analysis that was relevant was the legal structure that enforced property rights and contracts.

In contrast, the new conceptual framework, based on work beginning in the 1960s, is one which claims that the price system is intrinsically limited by our inability to make the distinctions on which perfect markets depend. Because of transaction costs and, more fundamentally, information and enforcement costs, some markets will not exist and other markets will not be even approximately competitive. In the new conceptual framework, institutions have at least two major roles. First, they are a response to missing markets. Second, they may help to overcome (or, possibly, they may aggravate<sup>5</sup>) the information problems that preclude complete markets. In the process, institutions are likely to limit the competitiveness of many markets.

The need to explain particular anomalies in the rural sector of developing countries helped shape this new conceptual framework and can be viewed as giving rise to the new field, the Economics of Rural Organization. At the cost of oversimplifying, we will trace the origins of this field to three papers: Cheung (1969), Akerlof (1970), and Stiglitz (1974). The Cheung and Stiglitz papers were concerned with explaining the institution of sharecropping---an institution that was pervasive and yet appeared to be inefficient since workers seemingly received less than the full marginal

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<sup>4</sup> See Smith 1776, p. 379, regarding adverse selection; and Keynes 1936, p. 144, regarding moral hazard.

<sup>5</sup> See Arnott and Stiglitz (1991).

return to their efforts. Akerlof's paper was concerned with demonstrating how uncertainty about quality might either destroy a market or render it very imperfect.

#### The Disadvantages of the Price System: Transaction Costs

Cheung (1969) argued that sharecropping arose because it provided the advantage of risk dispersion while entailing lower transaction costs than either insurance contracts or fixed rental agreements with escape clauses--- (clauses specifying conditions under which the rent could be deferred or reduced).<sup>6</sup> He argued that sharecropping contracts would specify the amount of labor effort to be expended and, hence, there would be no inefficiencies associated with sharecropping. The contracts were sufficiently flexible that workers were, in effect, fully compensated for any extra effort they expended.

Cheung's paper can be thought of as one of the modern forerunners of the vast literature on the transaction cost approach to economics pioneered by Coase's (1937) theory of the firm. This approach stresses the importance of contracting costs in shaping the institutional arrangements in an economy.<sup>7</sup> It emphasizes the particular (often non-price) form in which market exchanges occur as a result of transaction costs and takes as its unit of analysis the transaction, rather than the market. Bardhan (1989, p. 4) names the transaction cost approach the Coase-Demsetz-Alchian-Williamson-

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<sup>6</sup> Cheung wrote (1969: 32): "... with increasing transaction costs associated with additional escape clauses---in particular the cost of defining different levels of 'famine' in the market place and the cost of negotiating the rental reduction for each---the incremental gains of having them may be so small that no further 'custom' [of escape clauses] is developed by the market. Instead, an alternative device chosen is a share contract, under which multiple 'escape' provisions for the tenant will be implicit, and within which the rental payment is no longer fixed."

<sup>7</sup> This approach also provides explanations of sharecropping that are not based on risk. For example, Murrell (1983) demonstrates the transactional efficiency of share rents relative to fixed rents where land quality and future prices are unknown and the tenancy relation persists over many periods. Share rents, by rising and falling in value along with changes in prices, save on contract renegotiation costs.

North (CDAWN) school, after its major contributors.<sup>8</sup>

The Intrinsic Limitations of the Price System: Adverse Selection

The second paper that shaped the development of the Economics of Rural Organization was George Akerlof's (1970) article on the theory of lemons and quality uncertainty. He described the paper as:

a struggling attempt to give structure to the statement: Business in underdeveloped countries is difficult (Akerlof 1970, p. 488).

He argued that business was difficult because of adverse selection. Adverse selection arises when commodities are distinguished on one side of the market (usually, the sellers') but are treated as identical by the other side (the buyers').<sup>9</sup> The sellers of the best quality products will withdraw them from the market because their products cannot be distinguished and therefore are priced according to the average quality. More generally, the presence of people in the market who seek to pawn bad wares as good will tend to drive honest dealers out of the market. Akerlof's paper illustrated one possible, albeit extreme, consequence of adverse selection---zero trade. His paper also described numerous problems in developing countries to which such information problems gave rise, such as the practice of deliberately mixing stones with rice and selling the mixture as (real) rice, and the very limited scope of impersonal credit markets in developing countries. Akerlof's paper provided perhaps the first theoretical model within which one could interpret these phenomena.

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<sup>8</sup> See Williamson (1979) and the survey of this school in Eggertsson (1990). A set of references to empirical studies that take the transaction cost approach to economics is in Williamson 1985. In this volume, the chapter that is closest in spirit to the transaction cost approach is McIntire see chapter 27).

<sup>9</sup> As we noted earlier in endnote 3, the notion of a commodity was taken as a primitive in the Arrow-Debreu framework. There was no ambiguity about what was meant by "rice" and beliefs about the quality of rice being sold were, accordingly, not affected by anything that went on in the market, including the price at which rice was sold. It was this assumption, in particular, to which Akerlof took exception.

For a still earlier discussion of the adverse selection problem, and its implications for market failure, see Arrow [1963].



Akerlof's (1970) paper, along with the papers by Arrow (1963), Spence (1973), Stiglitz (1975), and Rothschild and Stiglitz (1976) are the forerunners of the vast literature on adverse selection. This literature concerns the problem of sorting commodities whose quality is unknown (workers, land, investment projects, or managers). It stresses the difficulty and importance from both a social and private perspective of ascertaining which are more productive, efficient, or better in some other respect, and the responses of markets to these informational problems.<sup>10</sup> That literature exposes the fact that once we extend the neoclassical model to include informational asymmetries between buyers and sellers, the extended model implies that some markets, especially for risks, will be missing, and many other markets will be thin and thus imperfectly competitive.

#### The Intrinsic Limitations of the Price System: Moral Hazard

In addition to adverse selection, there is another reason, which had been formalized somewhat earlier, that market systems are intrinsically limited by informational problems. This second reason is moral hazard. Moral hazard arises when an individual takes an action to maximize his own welfare that is to the detriment of others in situations where informational problems prevent the assignment to the individual of the full damage caused by his action. The problem of moral hazard was originally formalized by Arrow (1963) and Pauly (1968, 1974) in their work on the medical care and insurance markets. In the insurance context, the moral hazard problem is that the insured party takes less care when he has insurance: some of the cost of an accident is borne by the insurance company, and in deciding on the level of care, the insured does not take into account the insurer's

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<sup>10</sup> Much of the literature emphasizes the importance of informational asymmetries, the fact that some individuals may know more about these qualities than others. A more recent literature has been concerned with the problems which arise when all participants are uninformed; there must be some process of learning.

costs. It was shown that in the presence of moral hazard, markets for some forms of insurance might not exist, but that government intervention may cause more problems than it solves. Attempts to supplement deficient insurance markets run into the same moral hazard problems that impede private markets.<sup>11</sup>

#### Non-Price Controls as a Response to Missing Markets:

##### Principal-Agent Relations

Given that adverse selection and moral hazard impede transactions in many markets, other institutions are likely to arise to address these problems. This viewpoint has provided many explanations for sharecropping that are quite different from Cheung's, and that have quite different implications for efficiency.

If it is impossible (or very costly) to monitor workers, then it is not realistic to suppose, as Cheung did, that an employer can perfectly regulate the actions of his workers. On the contrary, the high costs of monitoring workers will preclude contracts based on effort. An effective way of motivating the tenant is an incentive contract. Stiglitz (1974) explained sharecropping as a response to missing markets for tenants' effort and for risk. Reversing the standard dictum that sharecropping attenuated incentives, he suggested instead that the function of sharecropping (like piece-rate systems in industrial economies) was actually to enhance incentives relative to what they would be under a conventional wage contract.<sup>12</sup> Sharecropping was advantageous to landlords and tenants because of (a) the savings in landlords' monitoring costs compared to a wage system with costly monitoring; (b) the increases in output compared to a wage

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<sup>11</sup> Insurance markets are also impeded by adverse selection problems, as shown formally by Rothschild and Stiglitz (1976). Hazell, Pomareda, and Valdes, eds. (1986) document some of the information and incentive problems encountered by developing countries in crop insurance programs.

<sup>12</sup> In this volume see Hayami and Otsuka (chapter 15). For a brief survey of the sharecropping literature, see Stiglitz (1989).

system with imperfect monitoring; and (c) the reduction in risk borne by tenants compared to a system where workers had to pay land rent but did not have access to risk markets.

Thus, while Stiglitz' analysis agreed with that of Cheung in arguing that sharecropping might be efficient, he disagreed with Cheung's conclusion that output was the same as it would have been in the absence of sharecropping. Alfred Marshall and other earlier writers were correct in arguing that sharecropping attenuated incentives. But given the costs of monitoring, sharecropping was better than the alternatives. Cheung, in Stiglitz' view, had ignored one of the most important "transaction" costs, those associated with monitoring worker effort.<sup>13</sup>

Other work in the Akerlof-Stiglitz tradition of imperfect information explains the institution of sharecropping as arising from the conjunction of missing markets in tenants' effort and credit<sup>14</sup>, or in the effort of both tenants and landlords (Eswaran and Kotwal 1985). In the latter model, sharecropping is a partnership between a landlord and tenant in which the landlord supplies management expertise and the tenant supervises his own and his family's labor. A share contract provides both parties with incentives to exert effort, yielding a better outcome than a rental or wage contract that provides incentives to only one party. Since economic development tends to equalize access to know-how across agents by diffusing information, their model provides an explanation for the fact that sharecropping typically gives way to fixed rental contracts as agrarian economies develop.

Stiglitz' (1974) paper on sharecropping and the contemporaneously written paper by Ross (1973) are forerunners of the vast literature on the

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<sup>13</sup> Cheung was correct, however, in emphasizing the transaction costs associated with writing complicated contingency contracts. The economies in writing a contract which is linear in output are significant. Curiously enough, much of the more formal principal-agent literature seems to have missed this basic lesson: that literature frequently involves highly non-linear, complicated contracts.

<sup>14</sup> This line of reasoning can be traced to Adam Smith and Alfred Marshall. (Jaynes 1984, p. 644).

theory of principal-agent relations. This literature stresses that the kind of incentive problem that arises in insurance markets and in sharecropping occurs, as well, in a wide variety of economic relations in capital, labor, land, and product markets.<sup>15</sup> This literature explains many observed institutional arrangements as responses to incentive problems that are pervasive in the economy. To illustrate the power of agency theory in another context, we will consider here how it has been used to explain the *interlinking* of contracts in the rural sector of developing countries.

*Interlinking* describes the simultaneous fixing of transactions between two parties over several markets, with the terms of one transaction contingent on the terms of another. There is evidence of extensive interlinkage practices in the rural sector of developing countries.<sup>16</sup> A simple interpretation of interlinkage practices is that they are barter transactions that save on transaction costs. But other reasons for interlinking are to circumvent incomplete markets and to reduce problems of adverse selection and moral hazard<sup>17</sup>. This is not surprising since adverse selection and moral hazard are basically forms of externality (see Greenwald and Stiglitz, 1986). Interlinkages of contracts across markets can internalize some or all of those externalities.

For example, a landlord may tie a subsidized sale of fertilizer to a sharecropping contract. The induced increase in the use of fertilizer will, in general, raise the marginal productivity of effort, which in turn will increase the worker's incentives to work, thus partially offsetting the reduced incentives of sharecropping.

Another common form of interlinkage is between credit and marketing.

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<sup>15</sup> Arnott and Stiglitz (1988) show how the same formal model can be applied to sharecropping, employment, and credit markets.

<sup>16</sup> For interlinking lenders, see chapters 7, 8, 9, and 10.

<sup>17</sup> There is a very large theoretical literature on interlinking. See Braverman and Stiglitz (1982 and 1986) and Braverman and Guasch (1984). A concise summary treatment is Bardhan (1989 chapter 12), while Bell (1988) provides a survey.

A lender may require a prospective borrower to use the lender as his exclusive wholesaler for his output for several periods before a significant loan is made, as well as during the period of the loan itself (see chapters 7 and 8). This improves the potential lender's ability to judge the farmers' capacity and willingness to repay (thus reducing adverse selection problems), and thereby may improve the farmer's opportunities to borrow. In these ways, interlinkages can induce Pareto-improving changes in the allocation of resources--- that is, they can make both parties to the transaction better off. Whether or not they do make both parties better off will depend, however, on general equilibrium effects (in the case of perfectly competitive agents) or on the effect that interlinking has on each party's bargaining power (in the non-competitive case), an issue that we will come back to later in this chapter.

#### Nonprice Controls as a Support to Market Exchanges

In the Arrow-Debreu model, complete reliance on price incentives leads to a Pareto efficient allocation of resources. That is why there is no role for institutions except property rights systems. Allowing for information asymmetries makes the price system insufficient for efficiency and creates incentives for a variety of institutions. Contractual arrangements, such as sharecropping and interlinking, that work through more than just a price may mitigate moral hazard and adverse selection. Institutions that link transactions in each period with transactions in other periods may also mitigate moral hazard and adverse selection.

An illustration of the power of intertemporal linkage is given by Heal (1976). Heal considered an agrarian economy in which neighboring peasant villages exchange some fraction of their crops each period. The crops are of heterogeneous quality. The quality of any item is known to the producer, but is not known to the buyer at the time of exchange. The one-period model for this situation is the one developed by Akerlof's (1970) paper on lemons, but Heal showed that there existed an equilibrium in the many-period case in

which no adverse selection would occur. The externalities across buyer and seller that existed in the one-period model were internalized in the many-period model. More generally, in repeated relationships, it is harder to get away with cheating---either on effort (moral hazard) or on quality (adverse selection) than in a single period relationship.<sup>18</sup>

In every society, some nonmarket controls are internalized as moral principles. The extent of moral hazard and adverse selection depends on those principles. In a suggestive debate, Arrow (1968) insisted to Pauly (1968) that moral hazard was, in part, a question of morality. The studies of rural credit markets in this book bear witness to the dependence of the scope of exchanges on kinship group and on non-market institutions.

### **The Place of the Economics of Rural Organization in Modern Development Economics**

In the preceding section, we traced the origins of the Economics of Rural Organization back to the emergence of a new neoclassical paradigm based on transaction costs and imperfect information. In this section, we put the Economics of Rural Organization in the context of other work in development economics. During the past four decades, there have been marked shifts in emphasis in development policies and corresponding shifts in the direction of research. Three major elements in these shifts are (a) planning, (b) the Institutionalist tradition, and (c) the Chicago School. We view the Economics of Rural Organization as a unification of the Institutionalist tradition with the rationalist approach of the Chicago School.

#### Planning

In the 1950s and 1960s, economic development was generally modeled as a

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<sup>18</sup> With no discounting and an infinite number of periods, one can obtain efficient outcomes. With discounting, matters are more delicate: if the discount rate is low enough one can obtain efficient outcomes, though to do so may require quite complicated strategies. See, for example Abreu [1988].

sequence of well-defined stages through which an economy must pass (just as the maturation of an individual requires his passing through a set of well-defined stages).<sup>19</sup> What the economy produced and what role the government ought to play differed according to the stage of development. An essential part of the early stages of development were high rates of capital accumulation to finance expansion into heavy industry.

The market failures approach to public policy provided a rationale for government's role in the economy. Government needed to intervene to correct a well-defined set of market failures--- that is, public goods, externalities, monopolies, and missing markets. The planning literature assumed that the most important set of missing markets were futures markets, markets for goods and services at future dates. In that view, government planning of investments was required to correct this market failure. A particularly strong need was perceived for government involvement in heavy industry where high fixed, sunk costs precluded effective competition within the domestic market. Most of the planning literature did not sufficiently take into account the possibility of international competition.

The optimization techniques of linear and dynamic programming gave the "planner" an analytic alternative to markets. The 1960s saw the adoption of development plans and development planning processes by country after country.

In the past fifteen years, there has been a shift away from planning. Like many shifts in intellectual fashion, it was motivated partly by events and partly by ideas. Those countries in which planning had played a particularly prominent role were not prominently successful in their development efforts. In none of the major development success stories, the newly industrialized countries (NICs), did planning play an important role. A further factor contributing to the downgrading of the importance of

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<sup>19</sup> Perhaps the classic study in this tradition is Walt Rostow (1960). The sequence of stages perspective is an old one: Marx thought of the development process as involving an inevitable sequence from feudalism to bourgeois capitalism, to socialism, and eventually to communism.

planning was the opening up of the world economy: with international trade, the concerns about the absence of competition in heavy industry, and about the material balances which were the focus of much of the planning exercise, became largely irrelevant. A case might be made for industrial policies, but not for general planning exercises.

The shift away from planning coincided with an increased emphasis on microeconomics within the economics profession, particularly on the micro-foundations of macroeconomics. Within development economics, it became increasingly recognized that macroeconomic planning models had paid insufficient attention to urban-rural migration and problems of incentives and selection. As or more important than the sector or product in which investment occurred were microeconomic questions such as the choice of which particular project, managed by which particular management team. What was required was entrepreneurship. Government bureaucracies not only were, by their structure, not conducive to entrepreneurship, but in fact they diverted scarce talent from the risk-taking associated with entrepreneurship to the safety of civil service positions, and made life more difficult for entrepreneurs by the regulations that they imposed.

There have thus been several distinct criticisms of the planning approach to development. First, it underestimated the opportunities provided by international trade, and IT assumed that government could control all aspects of allocation. Advocates of planning have an easy response to such criticisms: they simply would have to build better planning models to incorporate the international trading environment, government's limited control, and behavioral assumptions about the actions of households and firms that government cannot control.

A second criticism WAS that the central barriers to development do not arise from a lack of planning, but from a lack of entrepreneurship. Planning processes may not only have little to contribute, but may actually interfere with development.

A final source of the critique of planning was a growing appreciation



of the political economy problems associated with government intervention. Economists could not afford to ignore the problems of public choice and incentives within government. The best economic plans could be undone by lax procedures of accountability and enforcement.

#### The Institutionalist Tradition

The Institutionalist tradition in development economics stressed the economic role of nonmarket institutions. Most important among these institutions are those which use the power of the community to resolve disputes. In the view of John Commons, the leader of the American Institutionalist school,

If transactions are to go on peaceably without resort to violence between the parties, there must always have been a third party to the transaction, namely a judge, priest, chieftain, ..., who would be able to settle the dispute, with the aid of the combined power of the group to which the parties belonged. (Commons 1924, p. 67, quoted in Backhouse 1985)

Therefore economic problems cannot be treated in isolation from the legal, social, and political system.

The Institutionalist tradition also emphasized the interdependence between economic and political conditions: a change in economic conditions may induce a change in the distribution of power, which in turn may induce further changes in economic conditions. "And there is generally no equilibrium in sight." (Myrdal 1989, p. 312)<sup>20</sup>

The Institutionalist tradition called attention to the highly selective specification of institutions in neoclassical economics and to the need to treat actual institutions and observable more as part of the data to be used in economic analysis. But most Institutionalist writing was descriptive, rather than theoretical. It did not provide any alternative to the neoclassical theory of economic behavior. Moreover, it did not furnish

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<sup>20</sup> Myrdal's work is generally thought to be the most successful Institutionalist writing, and somewhat apart from the American Institutionalist tradition, surveyed in Brofenbrenner(1985). In this book, de Janvry and Sadoulet's (chapter 16) analysis of land reform policies in Colombia tries to capture the interdependence Myrdal describes.

a criterion of social welfare. It therefore did not provide a basis for explaining how government could speed up the development process.

Institutional considerations had no role in the planning process on which macro-development policy focused and could not easily be incorporated into that analysis. That analysis did not focus on the units, the households and firms, that comprised society, except in terms of the goods they produced and purchased, and the inputs they supplied or used.

### The Chicago School

A third major element in development economics is the Chicago School. Over a span of close to half a century, the great economists at the University of Chicago, including Ronald Coase, Milton Friedman, George Stigler, Gary Becker, Aaron Director, and Theodore Schultz, not only articulated more fully the implications of economic rationality and competitive markets, but showed that the reach of neoclassical economics could be extended well beyond the analysis of markets to a much broader context, including the interpretation of the behavior of government regulatory agencies, families, and the law. Schultz and others established the power of the economic (as opposed to the anthropological) approach to economic behavior in poor countries. He provided convincing evidence that traditional farmers in poor countries were not only sensitive to prices and other market factors, but allocated resources efficiently, given the information, institutions, and technology that were available to them (Schultz 1964).

What sets the Chicago school apart from other traditions is not its positive content---individuals privately optimize given their opportunities ---but its normative content. (See Reder 1982 for a survey.) Many members of the Chicago school view private actions as ones that induce globally Pareto efficient outcomes. A resource allocation is globally Pareto efficient if no one can be made better off without making someone else worse off. In contrast, a resource allocation between two individuals is pairwise Pareto efficient if there is no action that either could take that would

make one of them better off without leaving the other person worse off. It is a general characteristic of models of principal-agent relations that they are pairwise Pareto efficient, but that turns out to be a weaker criterion than global Pareto efficiency and to yield a less sanguine view of the "collective rationality" of individual actions than that held by the Chicago school (see, for example, Akerlof 1984).

In general, the Chicago school views information as a commodity like any other that would be acquired in the quantity that made its marginal cost equal to its marginal value. For example, Stigler in his analysis of credit markets held that "there is no 'imperfection' in a market possessing incomplete knowledge if it would not be remunerative to acquire (produce) complete knowledge." (1967, p. 291). Left out of this analysis are the impact of imperfect information on the competitive structure of the market and on whether the market will clear at all, questions that are examined in chapters 2 and 7 and Hoff and Stiglitz (1992).

The view of the Chicago school towards institutions is ambivalent. In the strand of the Chicago school pioneered by Becker, institutions can be explained by standard theory and the fact that economists go to the trouble of explaining them suggests that the institutions might be of some relevance. However, there is another strong strand within the Chicago tradition that says that institutions are efficient. Therefore, the kinds of resource allocations that one obtains if one uses simple models focusing on efficient resource allocation provide good descriptions of market allocations. In this view, private sector institutions are only an interesting sideshow. These two strands are not as inconsistent as they might seem. In the short run, the institutions that we have may not be those that ensure economic efficiency, particularly when government intervention suppresses their natural development. In these cases, institutions really do matter. The economic theory of institutions can give us insight into the direction in which institutions may be evolving or would evolve in the absence of government intervention.

Perhaps Coase (1960) provided the clearest articulation of the view that, if we want to study how societies (without government intervention) allocate resources, we need only study efficient resource allocation. He analyzed the consequences of the assignment of property rights in the presence of externalities. He argued that---apart from transactions costs---it made no difference how these were assigned. So long as the parties were left to themselves, they would arrive at an efficient solution.<sup>21</sup> The assignment of property rights could make a difference for transaction costs, and this should therefore influence how they are assigned.

In the development context, Cheung (1969) provides an excellent illustration of the Chicago perspective. While he argued that transaction costs could explain the institution of sharecropping, he also argued that the outcomes (the levels of production) are exactly the same as one would have obtained had one ignored the sharecropping institution: there is no attenuation of incentives.

While the Coase view emphasizes the importance of the assignment of property rights, those too can be viewed as an institution, and, like other institutions, they can evolve in a way to promote economic efficiency. Chapter 14 of this book, and recent studies of the treatment of property held in common<sup>22</sup> provide some limited support for this view. Traditionally, economists have bemoaned the "tragedy of the commons," the excessive grazing of commons land and the excessive fishing of common fishing grounds. The enclosure movement in Great Britain---effectively, a change in property rights---was given credit for an enhancement of efficiency, even if its distributional consequences were not so commendable. In recent studies of local common property resources within developing countries (village ponds,

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<sup>21</sup> This is sometimes referred to as the Coase theorem, though it might more appropriately be called the Coase conjecture. The result is valid only under highly stringent assumptions---including the absence of free rider (public good) problems and the presence of perfect information by all parties to the negotiations concerning the preferences of the other parties. For a critique, see, Farrell [1987] or Stiglitz [1985].

<sup>22</sup>See Dasgupta and Maler (1991), and citations therein.

pastures, river beds, sources of fuelwood, and so on) a variety of restrictions to the use of local commons have been observed, based on either deliberate allocation of use or on implicit norms, and enforced through elaborate patterns of monitoring and sanctions. The effect of these restrictions is to limit greatly the efficiency losses that are normally associated with property held in common. The key elements in these success stories are that the commons were open only to those who were members of the same small community, and there was a mutual dependence on the commons by members of the community.

These examples illustrate that local institutions can solve the problem of efficient use of local common property resources. Conversely, privatization need not yield efficient outcomes. Dasgupta and Maler (1991, p. 116) cite the case of the Amazon basin, where privatization of some of the commons land, supported by ill-advised tax policies, led to its degradation. Those hurt by the deforestation caused by cattle farmers were either too weak, economically and politically, or too dispersed to reach a negotiated agreement with the cattle farmers.<sup>23</sup>

#### The Economics of Rural Organization

The Economics of Rural Organization fills a gap between the competing approaches---planning, the Institutionalist tradition, and the Chicago school. Like the Institutionalists, it emphasizes the importance of organization in explaining economic behavior. Like the Chicago school, it retains the methodological individualism of neoclassical economics. But by modelling the effects of a set of individual-specific information constraints, it reaches a very different conclusion from that of the Chicago school: it argues that individual rationality or optimization will not, in general, coincide with social rationality. Even if "binary" relations---the

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<sup>23</sup> Thus Dasgupta and Maler (1991) do not adopt the Coasian-Chicago perspective. Their paper is in the spirit of the Economics of Rural Organization, described in the next section.

relations between any two parties---are pairwise Pareto efficient and cannot be improved on holding all other economic relations constant, the global market equilibrium can be improved on. Government may be able to make some individuals better off without making anyone else worse off, for example, by establishing group lending programs or promoting diversification of crops within a region so as to reduce aggregate swings in income. Such measures might be socially profitable even if they would not be privately profitable if undertaken by a single individual.<sup>24</sup>

Regarding institutions, Akerlof (1984) has shown formally that economically unprofitable institutions may persist as a result of a mutually sustaining network of social sanctions. Arnott and Stiglitz (1991) show how institutional arrangements for the provision of insurance---arising out of a perceived market failure of markets to provide insurance, itself a consequence of moral hazard---may actually make society worse off: these institutions are, nonetheless, part of an equilibrium.

The theory of rural organization shares with the planning approach the belief that some forms of government intervention may be desirable, but it differs from that approach in the kind of market failures that it emphasizes. It believes that the market can solve most problems of coordination of investment with future demand. Discrepancies between market and shadow prices surely exist, and where the government can easily correct those discrepancies, it surely should. But such problems are not at the heart of the failure of so many countries to develop. Like the Institutionalist economists, it looks to the institutions that comprise a society for at least part of the failure of some societies to develop, but unlike the Institutionalists, it develops formal models to explain the

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<sup>24</sup> The argument can be put more formally. Moral hazard and adverse selection give rise to pervasive externalities that cannot, in general, be completely internalized through pairwise arrangements such as sharecropping or interlinking. Moreover, in the absence of a complete set of risk markets, the distribution of prices is a public good (Greenwald and Stiglitz 1986).

origin and evolution of those institutions. It is part of the research agenda of the Economics of Rural Organization to design policies and institutions that improve on the performance of institutions.

Thus, while sharing the Chicago School's assumption that individuals are rational and respond to economic incentives, the Economics of Rural Organization denies the Chicago School's three major propositions: (a) that institutions are necessarily efficient in the absence of government interference; (b) that accordingly, to study market resource allocations one needs only to study patterns of efficient resource allocation---one can, ignore institutions; and (c) that the distribution of property rights (wealth) also makes no difference to the achievement of an efficient allocation of resources.

There is another reason for government intervention: even if evolutionary processes work in the long run to weed out inefficient social institutions, they work slowly. If Keynes' dictum in the context of short run macroeconomic fluctuations---"in the long run we are all dead"---has any validity, it surely must here: institutions often take generations to evolve.

In a sense, there is a curious affinity between the Chicago and the planning schools: they both believe that resource allocation processes can be studied independently of institutions. Yet we should remember that feudalism and traditional societies persisted for centuries. The Industrial Revolution and modern capitalism occurred in particular locations, at a particular time. They did not spring up everywhere, of their own accord. From our current perspective it is clear that they were not, and are not, "inevitable". Whether or not Max Weber was correct in identifying the social arrangements that were necessary for their origins, one conclusion surely is correct: the social context in which individuals act out their maximizing behavior has a profound effect both on the short-run equilibrium and the patterns of evolution of society.

The theory of rural organization has, it should by now be clear, a

close affinity to the earlier market failures approach out of which it grew, but it differs from it in several key respects. First, the market failures on which it focuses are different. It is not the coordination failure of investment with future demand, which underlies the planning approach, or the standard externalities across sectors<sup>25</sup>, or the provision of public goods. All of these are indeed important and by now well understood. The market failures on which the Economics of Rural Organization focuses are rather those that reflect the myriad of problems facing households and firms as a result of imperfect information and incomplete markets. These include information asymmetries about the characteristics of workers, land, and products, and problems arising from the absence of risk markets. Secondly, because these market failures are pervasive throughout the economy, correcting these market failures, both in principle and in practice, is a far more difficult task than correcting the market failures upon which earlier analyses focused.

#### Income Distribution, Economic Efficiency, and the Economics of Rural Institutions

Both the Chicago school and the theory of rural organization have been criticized for a seemingly inordinate focus on questions of efficiency at the expense of distribution. For the Chicago school, there is a good reason for this: as we noted, Coase contended that at least the essential properties of equilibrium could be studied independently of the distribution of property rights.<sup>26</sup> But Bardhan, in discussing recent developments in the theory of rural organization, has commented:

If the [old Institutionalists] erred in ignoring the micro[-]foundations of institutions, we in our turn should be careful that our theories of principal-agent games and moral hazard do not cover up the basic, often ugly, power relations involved in the phenomena we

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<sup>25</sup> Or the less formal theories underlying the "Big Push" (Rosenstein-Rodan [1943]) or sectoral interlinkages (Hirschman [1958]).

<sup>26</sup> This is, of course, also the major message of the fundamental theorems of welfare economics.



are studying. (Bardhan 1989, p. 238)<sup>27</sup>

Not all questions of distribution can be adequately modeled in a neoclassical framework, but many can be, as Bardhan goes on to show.<sup>28</sup>

There is a second and entirely different response to the criticism that modern theorists have focused on efficiency to the exclusion of distribution. Recently, economists have constructed models in which allocational efficiency itself depends on distribution. Hoff (1991) emphasizes that the inseparability of efficiency and distribution considerations is a general result for economies with imperfect information and missing markets.<sup>29</sup> For example, if individuals have private information, the ability of an economy to take advantage of exogenous investment opportunities can be shown to be sensitive to even small changes in the distribution of wealth. This result undermines the traditional view of the efficiency properties of the market. A complete set of markets, as Arrow and Debreu proved, obtains the largest possible output from any given set of scarce resources and exhausts all gains from trade. But a realizable set of market and non-market institutions, being limited by asymmetries of information between individuals, cannot in general attain either production or exchange efficiency. In general, the ability of individuals to get around information asymmetries depends on the distribution of wealth.

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<sup>27</sup> Carter (1985) elaborates on this criticism from the perspective of a participant-observer of the Institutionalist tradition.

<sup>28</sup> Braverman and Srinivasan (1981) describe the ambiguous distribution effects of interlinking, and Basu (1986) constructs a model where interlinking in three-way relations (for example between a shopkeeper, landlord employer, and tenant) can enable the landlord to press the tenant below the utility level he would have obtained absent three-way interlinking.

<sup>29</sup> This can be put formally as follows: imperfect information gives rise to incentive compatibility constraints and participation constraints. These make the economy second best, and they shift with even small changes in the distribution of wealth. There are thus real consequences to the distribution of property rights---consequences that go well beyond the transaction costs on which Coase focused.

## Lessons of the Economics of Rural Organization:

### The Contribution of this Book

Two questions are sometimes raised about this as well as other new branches of economics: Do we learn anything that we did not already know? What are the general principles or the central messages that we can take away? In the remainder of this introduction, we will address these two concerns. Detailed treatments of each chapter appear later in the four overview chapters in this book.

#### Some Novel Results

Academics have a penchant for looking for the unusual, the exceptions to the general principles, the contradictions to the prevailing conventional wisdom. Such exceptions, for example, Giffen goods with upward sloping demand curves, have played an important role in the development of microeconomics. But the question may well be asked whether curiosa have a role to play in a policy-oriented subject, such as development economics?

Several of the chapters in this book challenge much of the prevailing wisdom, but not by drawing attention to the exceptional case. Rather, they call attention to the central case where markets are missing and information is incomplete. It is the traditional neoclassical model, with its assumptions of perfect information and complete markets, which should really be viewed as the exception. Yet much of the prevailing wisdom is based on reasoning using the traditional neoclassical model. Indeed, it has only been in the last decade that the alternative paradigm has come even partially to replace the standard perfect markets model in the leading graduate schools.<sup>30</sup>

Here are three specific instances, each in an important policy arena,

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<sup>30</sup> The new paradigm is sometimes called the Economics of Information. It is neoclassical under the broad definition of neoclassical theory as the systematic exploration of the implications of rational, individualistic behavior subject to constraints.

where this book makes an important contribution to the policy debate.

In credit policy, it challenges the notion that government intervention offers remedies to the problems of informal rural credit markets in which interest rates far exceed the government's opportunity cost of funds. The challenge is based on administrative problems within government financial intermediaries (chapter 3), information costs within the informal sector (chapter 7), and the pattern of segmentation induced by differences in information costs among lenders (chapters 8 and 9).

In taxation, it challenges the longstanding presumption in favor of land taxation and against output taxation. The inequities arising from errors in administration are markedly different for the two forms of taxation (chapter 19), as are the risk-bearing consequences. In the absence of perfect risk markets, the losses from the risk imposed on farmers by land taxation may more than offset the gains from the beneficial incentive effects. Henry George was wrong after all! The efficient tax system will be a portfolio of taxes, including output taxes (chapter 18).

In welfare policy, the book reverses the presumption that in-kind transfers are always inferior to cash transfers in poverty alleviation programs. When it is difficult to identify who the

poor are, distorting the prices faced by the poor may be worth the value of improved targeting of aid (chapter 20).

Institutional economists (and others) may say of each result, they knew it all along. And they are probably right. The problem is that other economists, using more fully articulated models, disagreed. The land tax was nondistortionary; it is only badly trained or reactionary economists who could possibly argue against the land tax! What the chapters in this book should help establish is that there are implicit and misleading assumptions in many standard economic models. By developing models incorporating the assumptions that most economists believe describe developing countries, we believe this book will make a major contribution to policy discussion.

#### Some General Lessons

In the remainder of the introduction, we try to extract from the myriad of details that appear in the twenty-nine chapters of this book a small list of general lessons.

**Interactions among markets can reduce information costs, risks, and other barriers to trade.** Traditional economic theory stresses the interactions among markets---but those interactions are always governed by and limited to price and income interactions. The Economics of Rural Organization provides an explanation for the much richer set of interactions that we actually observe.

Figure 1 illustrates some of the mechanisms highlighted in this book. The figure represents an economy with a goods market and both formal and informal markets in credit and land. Although more precise definitions are useful in particular contexts, here we mean by formal markets those that are enforced by statutory law. By informal markets we mean those that are, in general, enforced only through customary law and may (as in the case of

squatter land or certain credit transactions) actually be illegal under statutory law. Chapters 8 and 9 provide evidence that commercialization in the goods markets leads to interlinked trade-credit contracts that act as a substitute for collateral on a loan. Commercialization of production thereby promotes growth in the informal credit market.<sup>31</sup> Diversification of production also promotes the growth of the credit market by reducing the covariance of risks. These effects of the goods market on the credit markets are indicated as arrows A in figure 1.

Chapter 14 provides evidence that commercialization in the goods market, by creating a demand for new combinations of inputs, has induced changes in customary land rights systems in Sub-Saharan Africa that permit greater freedom to transfer and alienate land. The resulting expansion of the land markets is indicated by arrows labeled B.

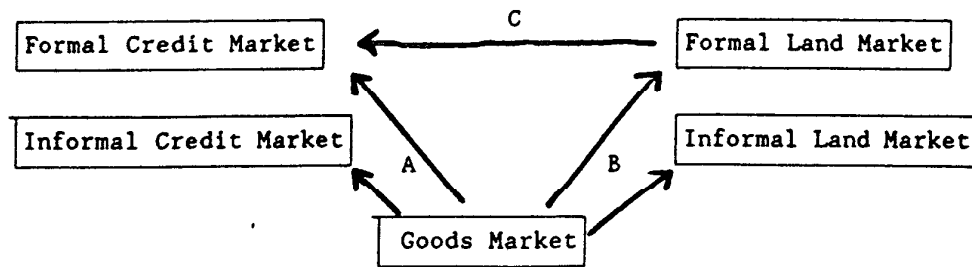
Banks loans typically require land collateral. Chapter 13 provides evidence that titling of land (given customary law that makes it acceptable to alienate land to strangers) increases farmers' access to the formal credit market. The dependence of the formal credit market on the formal land market is indicated by arrow C.

**The market imperfections associated with imperfect information and incomplete risk markets cannot be corrected by simple interventions.** Market imperfections naturally give rise to calls for government intervention. Sometimes these are based on an incomplete understanding of the underlying cause of the problem. For example, credit markets work imperfectly largely because of the screening, monitoring, and enforcement problems faced by lenders. The chapters in Part I of this book, as well as in chapter 27, provide ample evidence that if governments intervene, they will face all of these problems as well, though sometimes in a slightly different form than would private lenders.

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<sup>31</sup>Further evidence is provided for the Philippines in Floro and Yotopoulos (1991).

FIGURE 1.



This is in marked contrast to the kinds of market interventions envisaged in the earlier market failure approach. The market failure associated with pollution, for example, can easily be corrected: all that is required are a pollution tax and, perhaps, a franchise tax on firms in the polluting industry. The planning approach stressed the market failure associated with a particular information problem: coordination of investment with future demand. Planning---even indicative planning---was "all" that was required. But no central planning agency can ever hope to solve, or resolve, the information problems which are at the heart of the theory of rural organization.<sup>32</sup>

**There may be important interactions between the "new" market failures (information and risk) and the old market failures.** The ability of government to correct some "standard" market failures may be impeded by the absence of information. This is illustrated in chapter 25. If information were costless, it would be easy to establish a market for water, which would ensure that water would be used efficiently. Many of the rules that were historically developed for the allocation of water can be understood as responses to limitations on information in an environment where water was in relatively plentiful supply. As development has occurred and population pressure has increased, the scarcity value of water in much of the world has risen, and the traditional rules are now very inefficient. Chapter 25 considers a variety of alternative institutions to rationalize the allocation of water among competing uses.

The public provision of agricultural extension services, discussed in chapter 28, can be thought of as an example of both the old and new market

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<sup>32</sup> The distinction here should be a familiar one: Lange [1936] thought that market socialism or planning could be used to obtain a more efficient allocation of resources that would resolve some of the information deficiencies of market processes (arising in part, to use modern terminology, out of the incompleteness of futures markets). Hayek and von Mises saw the information problem as being much more complex, one that market socialism or planning could never resolve. See Stiglitz [forthcoming].

failures. Knowledge is in many ways a public good, a traditional market failure. The design of extension services raises the problem of monitoring and incentives for extension agents, a new market failure.

**More generally, government policies need to take into account the existence of the market imperfections that prevail in developing countries.** For example, chapters 18 and 19 point out that while, with perfect information and perfect risk markets, heavy reliance on a land tax might be desirable, this may not be the case with imperfect information and imperfect risk markets. A land tax imposes a greater social cost of risk-bearing than does an output tax, where the government effectively pools and spreads the risk. And in the presence of errors in administration, a land tax may give rise to greater inequities and thereby result in lower social welfare, than an output tax.

**Government policies need to take into account the interaction between the private sector and the public sector; private institutions are both endogenous and locally rational.** This is of course a general lesson of all public policy analysis, but the chapters of this book document some of the more important interactions that arise within the rural sector. These may either reduce the effectiveness of government policy, increase its costs, or lead to unintended or unanticipated side effects.

Three examples will illustrate what we have in mind. First, many governments have encouraged the spread of formal credit institutions in the rural sector. These formal credit institutions interact with informal credit markets (local moneylenders). The local moneylenders may be at an informational advantage relative to the government-sponsored banks. Loans that a bank could not easily make to a villager could still be profitable to an informal lender whose proximity to the borrower reduces his monitoring and enforcement costs, or to a trader who can reduce his enforcement costs by interlinking credit with an output contract. Thus, the incidence of



subsidies to formal credit will depend on the nature of competition in the informal market. If it is a monopoly, then none of the benefits of the subsidies are likely to benefit the borrower in the informal market (see chapter 9). If the informal credit market is characterized by Chamberlinian monopolistic competition, then at least part of the benefits of credit subsidies will be dissipated because they will induce an inefficient level of entry into the informal market (see chapter 2 and Hoff and Stiglitz (1992)). Only if the informal credit market is perfectly competitive will the incidence of subsidies to formal credit normally be on the borrower, and even here one can derive conflicting results for special cases (see chapters 8 and 9).

Second, consider government efforts to stabilize agricultural prices by putting goods into storage when prices are low and taking them out when prices are high. Such price stabilization activities will tend to displace private storage. This may both increase the cost of government stabilization programs and, if public storage is more expensive than private, result in inefficient resource allocations (see chapter 21).

Third, land-to-the-tiller programs can be undermined by arrangements that are subleases in disguise (see chapter 15).

**Government intervention also needs to take into account the limitations of public administrative capacity and the sociopolitical environment.**

Government loan programs have to take into account the ability of government to credibly enforce repayments (chapters 2 and 10). More subtly, government interventions can induce changes in the balance of political power that undermine the original purpose of the intervention (chapter 16).

**As economies evolve, the nature of the information problems may change and may result in new institutions and possibly a new role for government.** This is seen dramatically with respect to contract enforcement. In traditional societies, social pressures may suffice to ensure the enforcement of

contracts under normal conditions. Traditional forums exist for handling disputes, and the sanctions for not complying with the outcome of such adjudication processes are effective (chapters 5, 6, and 12). Customary law may also obviate the enforcement of statutory law where the two are inconsistent (see chapter 14 regarding land statutes).

At a later stage of development, some economies may, with respect to contract enforcement, be in the worst of all possible situations: traditional enforcement mechanisms have become weakened but have not been replaced by effective legal systems.<sup>33</sup> Chapter 7 documents the very high transaction costs of moneylenders in Pakistan, and chapter 10 documents the breakdown of lending controls in the cooperative agricultural sector in Israel.

**While government may play a central role in correcting market failures (both of the old and the new type), it has a potential role beyond that---the role of social innovation.** The theory of public goods provides a rationale for why, left to itself, markets might generate too little social innovation: A large part of the benefits accrue to persons other than the innovators. The market may be at an inefficient Nash equilibrium---there is no private coordinating mechanism to "switch" the economy to a more efficient equilibrium. It is this form of coordination (coordination for institutional change), not the kind of coordination upon which the planning models focused, that in our view is of paramount importance.

Government, therefore, often has to play a central role in social innovation. Innovation entails risk of failure, as the government has limited information about the actions that will be conducive to success in social innovation. Where possible, the government should design programs so

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<sup>33</sup> Moreover, reputation mechanisms, which are an alternative either to customary or formal legal structures as a mechanism for contract enforcement, may be less effective at the high rates of interest prevailing in the early stages of development. Moreover, in the transitional stages, increased mobility and uncertainty may inhibit the workings both of customary law and reputation mechanisms.

that the reasons for the failures can be ascertained, and so that experience with one program can lead to the design of a new program with a greater chance of success (chapter 3).

The success of the Grameen Cooperative Bank in Bangladesh provides an example of such social experimentation. Chapter 4 analyzes one salient aspect of that program, peer monitoring, that contributed to its success.

### **Concluding Remarks**

To many development economists, much of the foregoing remarks may appear simply as common sense: Why a new "Economics of Rural Organization?" It has long been remarked how uncommon common sense is, and perhaps nowhere is this more true than in economics. Much of the development literature of the past quarter century has ignored the kinds of considerations that are emphasized here. This is partly because it has seemed hard to incorporate these considerations into formal development and planning models. And it is partly because the institutional literature emphasizing these considerations seemed to be out of keeping with recent advances in economics; it was atheoretical or even anti-theoretical. We hope that the chapters in this book will have addressed these problems by showing that actual rural institutions can be analyzed from a solid theoretical basis and subjected to rigorous hypothesis-testing, and that simple mathematical models of institutions can be usefully incorporated into formal development models.